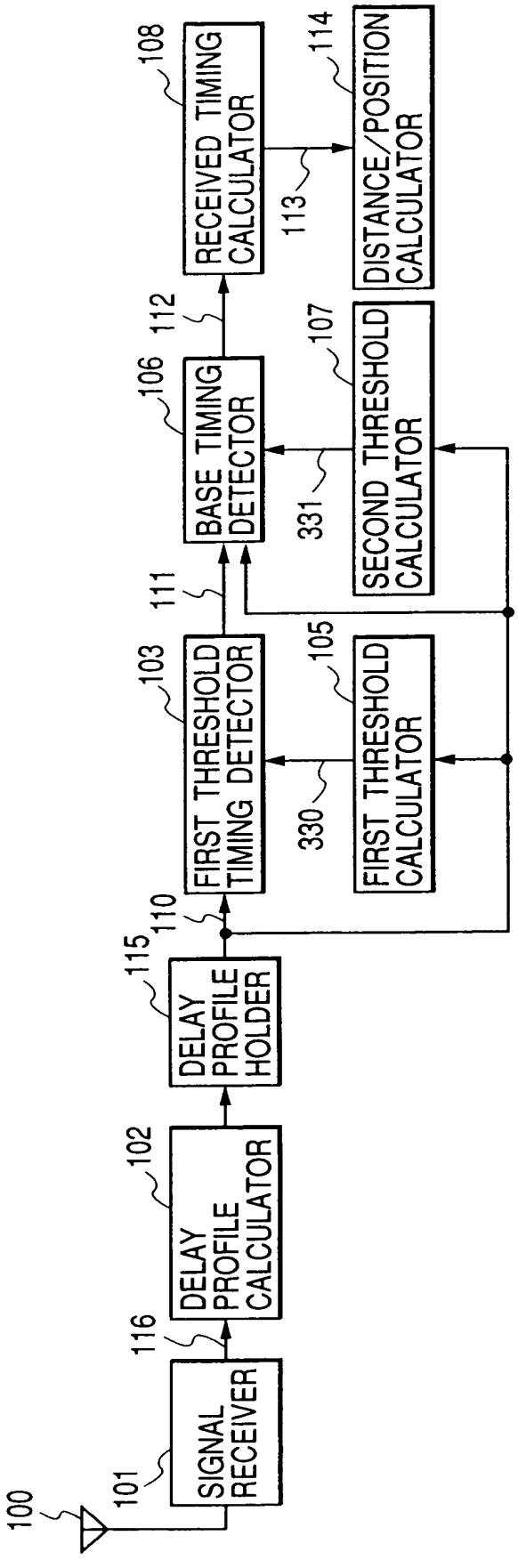
FIG. 1


100
101
SIGNAL RECEIVER
116
DELAY PROFILE CALCULATOR
102
DELAY PROFILE HOLDER
115
110
FIRST THRESHOLD TIMING DETECTOR
103
111
BASE TIMING DETECTOR
106
112
RECEIVED TIMING CALCULATOR
108
113
DISTANCE/POSITION CALCULATOR
114
330
FIRST THRESHOLD CALCULATOR
105
331
SECOND THRESHOLD CALCULATOR
107

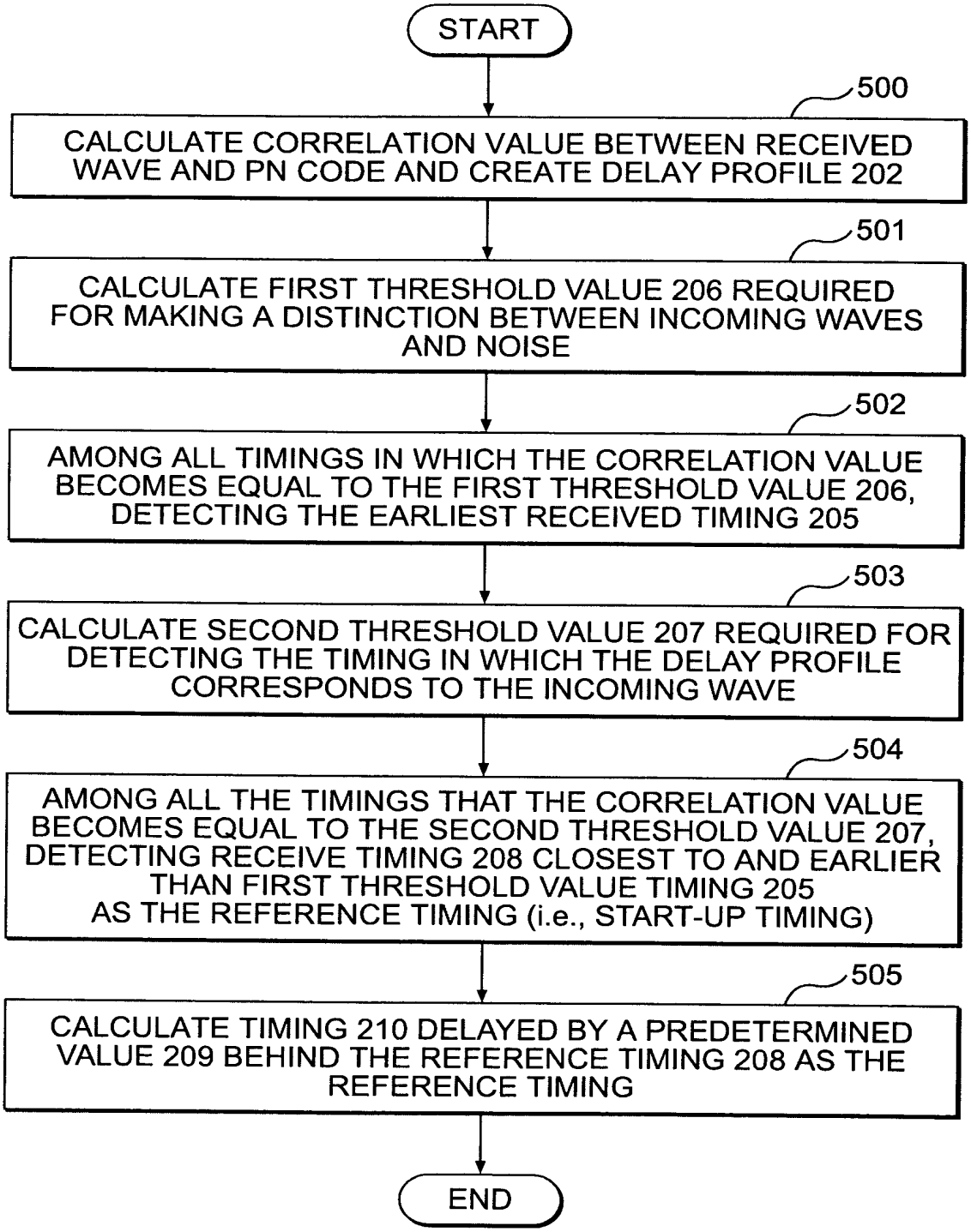

START
500
CALCULATE CORRELATION VALUE BETWEEN RECEIVED WAVE AND PN CODE AND CREATE DELAY PROFILE 202
501
CALCULATE FIRST THRESHOLD VALUE 206 REQUIRED FOR MAKING A DISTINCTION BETWEEN INCOMING WAVES AND NOISE
502
AMONG ALL TIMINGS IN WHICH THE CORRELATION VALUE BECOMES EQUAL TO THE FIRST THRESHOLD VALUE 206, DETECTING THE EARLIEST RECEIVED TIMING 205
503
CALCULATE SECOND THRESHOLD VALUE 207 REQUIRED FOR DETECTING THE TIMING IN WHICH THE DELAY PROFILE CORRESPONDS TO THE INCOMING WAVE
504
AMONG ALL THE TIMINGS THAT THE CORRELATION VALUE BECOMES EQUAL TO THE SECOND THRESHOLD VALUE 207, DETECTING RECEIVE TIMING 208 CLOSEST TO AND EARLIER THAN FIRST THRESHOLD VALUE TIMING 205 AS THE REFERENCE TIMING (i.e., START-UP TIMING)
505
CALCULATE TIMING 210 DELAYED BY A PREDETERMINED VALUE 209 BEHIND THE REFERENCE TIMING 208 AS THE REFERENCE TIMING
END

FIG. 2

FIG. 3

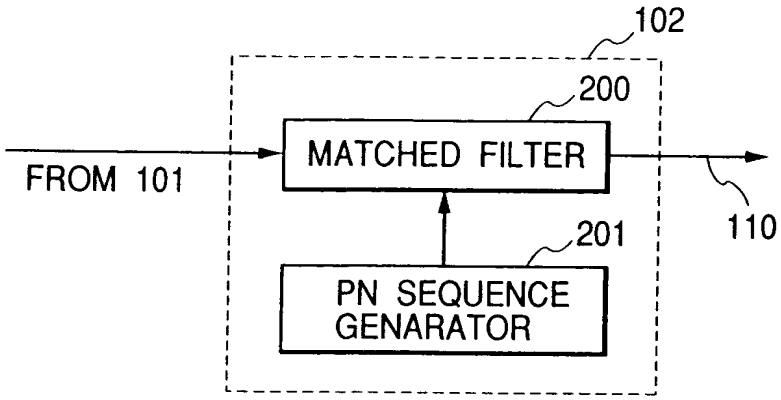

102
200
MATCHED FILTER
FROM 101
110
201
PN SEQUENCE
GENARATOR

FIG. 4

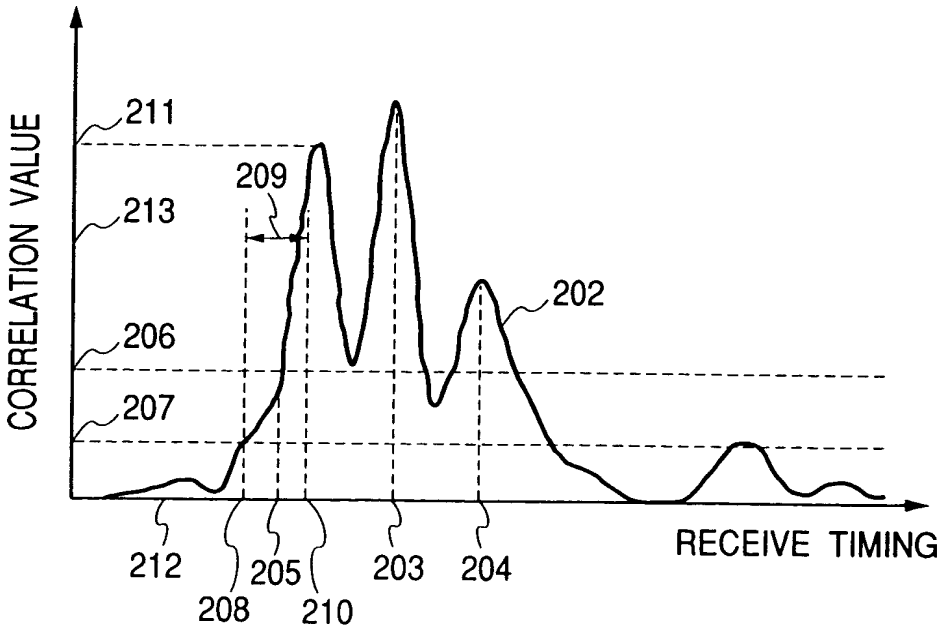

CORRELATION VALUE
211
209
213
202
206
207
212
208
205
210
203
204
RECEIVE TIMING

FIG. 5

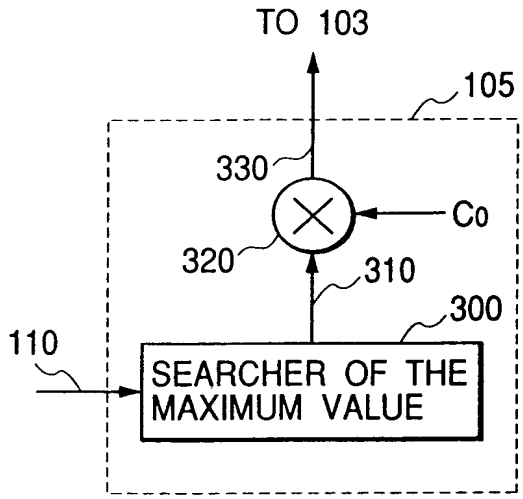

TO 103
105
330
C0
320
310
300
110
SEARCHER OF THE MAXIMUM VALUE

FIG. 6

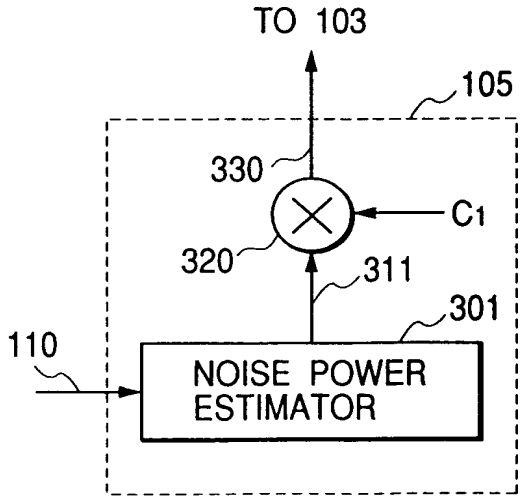

TO 103
105
330
C1
320
311
301
110
NOISE POWER ESTIMATOR

FIG. 7

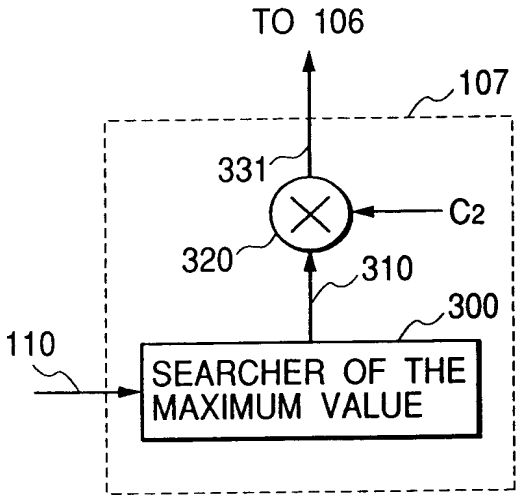

TO 106
107
331
C2
320
310
300
110
SEARCHER OF THE MAXIMUM VALUE

FIG. 8

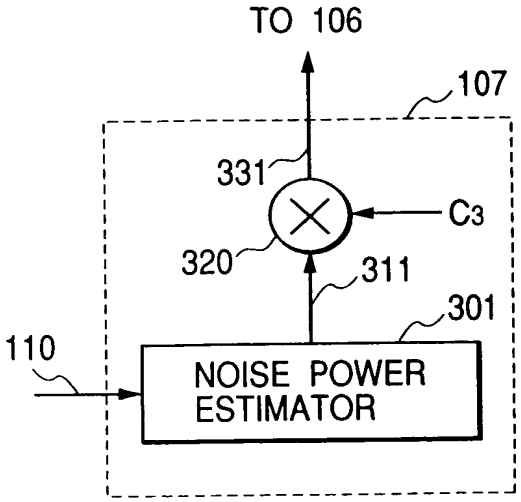

TO 106
107
331
C3
320
311
301
110
NOISE POWER ESTIMATOR

FIG. 9

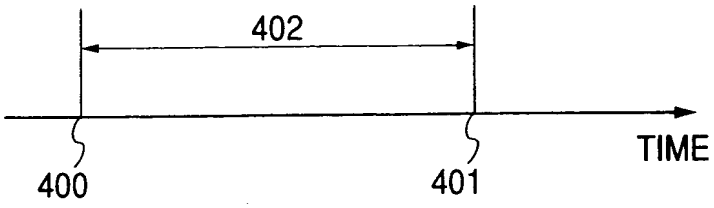


FIG. 10

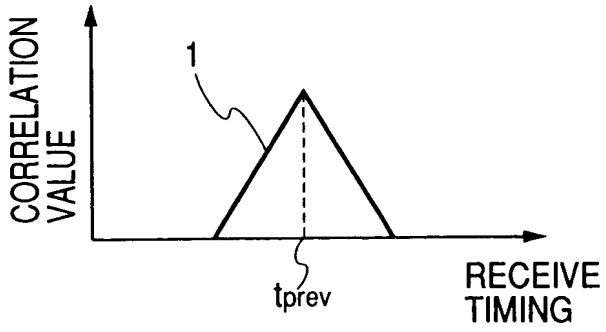
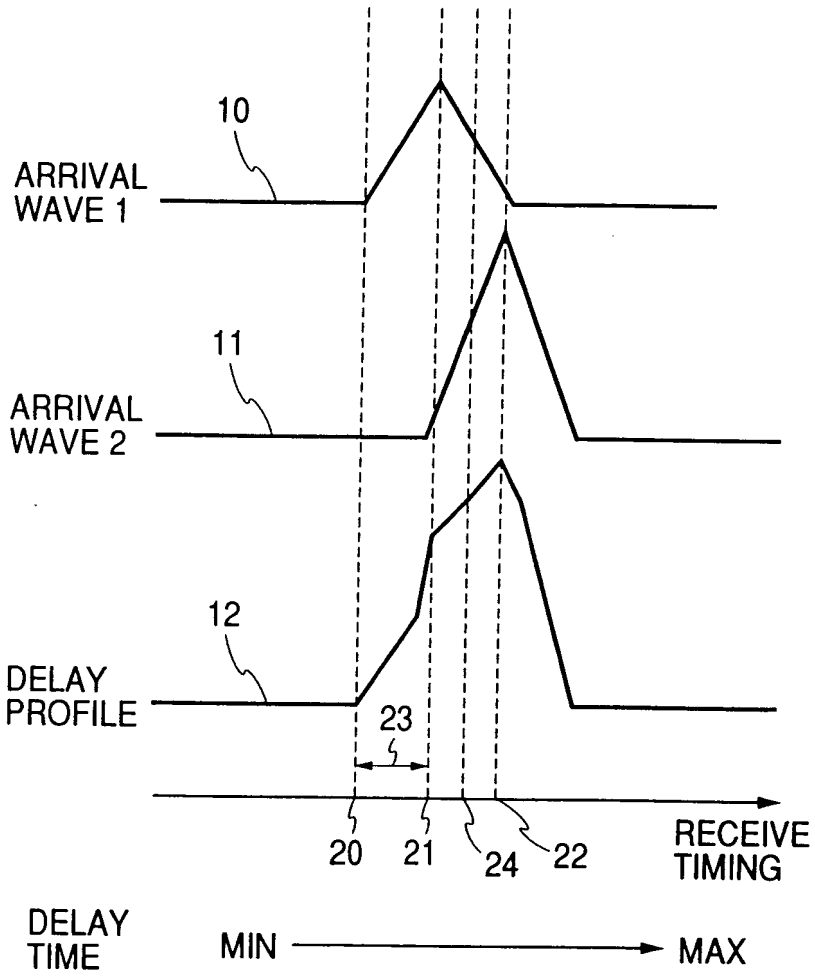


FIG. 11


10
ARRIVAL WAVE 1
11
ARRIVAL WAVE 2
12
DELAY PROFILE
23
20
21
24
22
RECEIVE TIMING
DELAY TIME
MIN
MAX